

WHAT IS CLAIMED IS:

1. A method of manufacturing a lead comprising the steps of:

placing an inner layer of extrusion material on a mandrel;

5 placing at least one conductor coated with a layer of extrusion material on the inner layer of extrusion material;

placing an outer layer of extrusion material over the at least one conductor coated with a layer of extrusion material to form a lead body assembly;

10 forming the lead body assembly, wherein the formed lead body assembly contains a unitary wall and wherein the conductors are within the unitary wall;

attaching at least one electrode to the at least one conductor at a distal end of the lead body; and

15 attaching at least one connector to the at least one conductor at a proximal end of the lead body.

2. The method as claimed in Claim 1 wherein the forming step further comprises the steps of:

placing heat shrink tubing over the lead body assembly;

heating the lead body assembly to melt the extrusion material in the lead body assembly;

compressing the melted extrusion material around the at least one conductor coated with a layer of extrusion material in the lead body assembly;

cooling the lead body assembly to form the lead body; and

removing the heat shrink tubing from the lead body.

3. The method as claimed in Claim 1 wherein the extrusion material of the inner layer and the extrusion material on the at least one conductor coated with a layer of extrusion material and the extrusion material of the outer layer are formed from the same type of extrusion material.

4. A method of manufacturing a lead body comprising the steps of:

placing at least one conductor coated with a layer of extrusion material on a mandrel; and

20 placing an outer layer of extrusion material over the at least one conductor coated with a layer of extrusion material to form a lead body assembly.

5. The method as claimed in Claim 4 further comprising the steps of:

placing heat shrink tubing over the lead body assembly;

heating the lead body assembly to melt the extrusion material in the lead body assembly;

compressing the melted extrusion material around the at least one conductor coated with a layer of extrusion material in the lead body assembly;

cooling the lead body assembly to form the lead body; and
10 removing the heat shrink tubing from the lead body.

6. The method as claimed in Claim 4 wherein the extrusion material on the at least one conductor coated with a layer of extrusion material and the extrusion material of the outer layer are formed from the same type of extrusion material.

15 7. A method of manufacturing a lead body comprising the steps of:

placing an inner layer of extrusion material on a mandrel;
and

20 placing at least one conductor coated with a layer of extrusion material on the inner layer of the extrusion material on the mandrel.

8. The method as claimed in Claim 7 further comprising the

steps of:

placing heat shrink tubing over the lead body assembly;

heating the lead body assembly to melt the extrusion material in the lead body assembly;

5 compressing the melted extrusion material around the at least one conductor coated with a layer of extrusion material in the lead body assembly;

cooling the lead body assembly to form the lead body; and

removing the heat shrink tubing from the lead body.

10 9. The method as claimed in Claim 7 wherein the extrusion material on the at least one conductor coated with a layer of extrusion material and the extrusion material of the inner layer are formed from the same type of extrusion material.

10. A method of manufacturing a lead body comprising the steps of:

providing at least one conductor coated with a layer of extrusion material; and

5 placing the at least one conductor coated with a layer of extrusion material on a mandrel to form a lead body assembly.

11. The method as claimed in Claim 10 further comprising the steps of:

placing heat shrink tubing over the lead body assembly;

10 heating the lead body assembly to melt the extrusion material in the lead body assembly;

compressing the melted extrusion material around the at least one conductor coated with a layer of extrusion material in the lead body assembly;

15 cooling the lead body assembly to form the lead body; and removing the heat shrink tubing from the lead body.

12. A lead for implantation in a human body, the lead comprising:

a lead body comprising of:

a unitary wall having an inner portion that forms

5 a lumen; and

one or more conductors wherein the one or more conductors are spirally wound around the lumen and are within the unitary wall;

at least one electrode located at a distal end of the lead

10 body; and

at least one connector located at a proximal end of the lead body, wherein the at least one connector and at least one electrode are connected by at least one conductor.

13. The lead as claimed in Claim 12 wherein the unitary

15 wall is comprised of extrusion material.

14. The lead as claimed in Claim 12 wherein no electrical insulation material is between the conductors and the unitary wall.

15. The lead as claimed in Claim 12 further wherein the

20 diameter of the lead is no greater than 34 French.

16. The lead as claimed in Claim 15 further comprising of

at least five electrodes.

17. A system for stimulating a portion of a human body,
wherein the system comprises:

a source for generating a stimulus; and

5 a lead connectable to the source for receiving the stimulus
from the source, wherein the lead comprises:

a lead body comprising:

a unitary wall having an inner portion that
forms a lumen; and

10 at least one conductor wound around the
lumen and within the unitary wall;

at least one electrode located at a distal end of the
lead body; and

15 at least one connector located at a proximal end of
the lead body, wherein the at least one connector and the
at least one electrode are connected by the at least one
conductor.

18. The system as claimed in Claim 17, wherein the unitary
20 wall is comprised of extrusion material.

19. The system as claimed in Claim 17 wherein no electrical insulation material is between the conductors and the unitary wall..

20. The system as claimed in Claim 17 wherein the diameter 5 of the lead is no greater than 34 French.

21. The system as claimed in Claim 15 wherein the lead comprises at least five electrodes.

22. A method of manufacturing a lead for stimulation comprising the steps of:

placing at least one conductor coated with a layer of extrusion material on a mandrel;

5 forming a unitary lead body assembly with a lumen and with at least one conductor within a unitary wall and spirally wound around the lumen;

attaching at least one electrode to the at least one conductor at a distal end of the lead body; and

10 attaching at least one connector to the at least one conductor at a proximal end of the body.

23. The method as claimed in Claim 22 wherein the step of placing further comprises the steps of placing a first layer of extrusion material on the mandrel.

15 24. The method as claimed in Claim 22 wherein the step of forming further comprises the steps of:

placing heat shrink tubing over the lead body assembly;

heating the lead body assembly to melt the extrusion material to form a unitary body; and

20 removing the heat shrink tubing from the lead body.

25. The method as claimed in Claim 24 further comprising the step of compressing the melted extrusion material around the at least one conductor coated with a layer of extrusion material in the lead body assembly.

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26. The method as claimed in Claim 23 wherein the extrusion material is placed exterior to the at least one conductor.

27. The method as claimed in Claim 23 wherein the extrusion material is placed interior to the at least one conductor.

10 28. The method as claimed in Claim 27 wherein a second layer of extrusion material is placed exterior to the at least one conductor.